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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Before the Board of Patent Appeals and Interferences

In re:

Applicant	:	Gerald J Grott
Serial Number:		10/706,341
Filed	:	November 11, 2003
For	:	METHODS OF UTILIZING WASTE WATER PRODUCED BY WATER PURIFICATION PROCESSING

Primary Examiner
Jeffrey L. Gellner

Art Unit 3643

BRIEF FOR APPLICANT

This an appeal under 37 CFR §§41.30 et seq. from the Final Rejection of all claims then in the application, Claim 4-6. This Brief is submitted in compliance with 37 CFR §41.37.

THE REAL PARTY IN INTEREST

The real party in interest is the appellant, Applicant-Inventor, Gerald J. Grott.

RELATED APPEALS AND INTERFERENCES

There are no other prior or pending appeals or interferences known to appellant or his undersigned attorney which may be related to, directly affect or be directly affected, by or have a bearing on the Board's decision in the present appeal.

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STATUS OF THE CLAIMS

Claims 4-6, all of the claims in the case were finally rejected by the Primary Examiner.

STATUS OF AMENDMENTS

There have been no amendments presented which have not been entered in the case.

SUMMARY OF THE CLAIMED SUBJECT MATTER

Contaminated water (e.g., agricultural runoff) containing salts of sodium, calcium and magnesium, especially their chlorides, sulfates and carbonates, are processed to produce a first effluent "clean" water stream and a second effluent "waste" water stream.

The first or "clean" water stream has a higher sodium content than the contaminated water, i.e., increased sodium in comparison to the original contaminated water. The second or "waste" water stream has more than 0.15% of the salts.

The "clean" water stream is analyzed to determine if its sodium content is higher than that necessary for potable use. If so, it is used in a cooling tower to dissipate heat. (Claim 4)

In one preferred embodiment of the method, the contaminated water is first processed by "water softening," e.g., removal of scale forming materials such as calcium or magnesium salts, especially their carbonates. (Claim 5) In other preferred embodiments, the contaminated water is first processed by ion-exchange, precipitation, membrane softening or electrolysis. (Claim 6)

THE GROUNDS OF REJECTION TO BE REVIEWED ON APPEAL

Claims 4-6, all of the claims in the case, were finally rejected under 35 U.S.C. §103(a) as unpatentable over McManus, in view of Thorburg in further view of Mukhopadhyay.

ARGUMENT

GROUPING OF THE CLAIMS

Applicant will argue the patentability of independent Claim 4. The dependent Claims 5 and 6 will stand according to the Board's decision on Claim 4.

I. The Examiner erred in combining the references.

Where the Examiner relies upon a combination of prior art references, he bears the burden of showing some teaching or suggestion in these references that supports their use in combination. *Ashland Oil, Inc. v. Delta Resins & Refractories, Inc.*, 776 F.2d 281, 293, 297; 227 USPQ 657 (Fed.Cir. 1985). The Examiner has not identified the particular teachings of the McManus or Thorburg references which "would have" (§103) motivated the person of ordinary skill to combine the teachings of these references to make the combination of steps claimed by Applicant.

Instead of pointing to any such teaching or suggestion, the Examiner airily dismisses Applicant's argument by stating that the "references used in the rejections to be combinable because they all deal with water use and purification." (Final Rejection, page 4.) This falls far short of the standard for making a *prima facie* case of obviousness. *In re Dembiczak*, 175 F.3d 994, 1000, 50 USPQ2d 1614 (Fed.Cir. 1999)(broad conclusory statements are not evidence)(modified on other grounds 203 F.3d at 1316).

II. The references teach away from the claimed method.

McManus, the primary reference, teaches the use of agricultural wastewater produced from crop irrigation in a cooling tower. A pilot-scale plant (fig. 4, p. 155) was constructed consisting of an electric heater to produce simulated hot water continuously fed in one pass through the shell side of a tube/shell heat exchanger. The wastewater from a cooling tower made four passes through the heat exchanger, then was recycled to the top of a cooling tower. A side-stream of the wastewater (taken before the cooling tower) was mixed with makeup wastewater. This makeup-recycle mixture was continuously treated with lime, soda ash and a polymer coagulant in a treatment vessel and then sent to a thickener vessel. The underflow sludge from the thickener was discarded to an evaporation pond. The supernatant water recovered from the thickener was recycled to the treatment vessel and the treated supernatant-makeup mixture was then sent to the cooling tower sump. The coolant stream from the cooling tower was acidified with sulfuric acid.

The selected treatment process to control the circulating water chemistry was lime/soda softening. Chemical constituents to be controlled through treatment were calcium, magnesium and silica. (McManus, p. 441) (emphasis added)

The operation of this pilot plant proved effective at high cycles of concentration which achieved the overall objectives of reducing makeup requirements and waste volumes for ultimate disposal. For the particular makeup source evaluated, conventional lime/soda softening with polymer coagulation proved to be effective even at 30 cycles of concentration.

These results are significant because they demonstrate that it is feasible to operate recirculated cooling system at high cycles of concentration and with agricultural waste water makeup without sophisticated treatment such as ion exchange or reverse osmosis. (emphasis added)

Scale components of concern include calcium carbonate, magnesium silicate and calcium sulfate complexes. (McManus, p. 445)

Thus, it is seen that **McManus** is not at all concerned with the sodium content of either the original raw wastewater or the sodium content of his recirculating stream to the cooling tower. A person of ordinary skill in the art would find no hint or suggestion of a process such as defined by Applicant's Claim 4, based on sodium content of either the wastewater or the cooling tower water and would be directed away from use of "ion exchange."

Thorburg disclosed a continuous process in which raw water ("salt-containing impure water") (Col. 1, line 12) is passed upwardly through a downwardly moving bed of a weak anion exchange resin in the form $R-HCO_3$, forming the respective carbonates of the raw water components (e.g., sodium carbonate). This "first effluent" is then treated countercurrently with a weak acid cation exchange resin in the form $R'H$.

The released hydrogen reacts with the bicarbonate present thereby leaving pure water and carbon dioxide...The resin leaves the bottom of the dealkalization unit in the metal form R'-Me (containing calcium, magnesium sodium, etc.). .. (Column 2, lines 32-36)(emphasis added).

Thus, the first effluent of **Thorberg** contains all of the sodium in the raw water (as sodium carbonate) and the second effluent is "pure water" (containing no sodium) with all of the sodium content exiting the treatment column as R'Na. This is expressly contrary to Applicant's claimed method where the "clean water" contains "increased sodium so as to have more sodium than the contaminated water" (Claim 4) and nowhere does **Thorberg** have "a salt content too high for potable use" (Claim 4) – again teaching squarely away from Claim 4 and squarely away from the combination of **Thorberg** (ion exchange) with **McManus** which "would have" (§103) led the worker of ordinary skill to use conventional water softening of a sidestream-makeup water stream, rather than ion exchange of the entire impure water input.

CONCLUSION

There is nothing in either reference which would suggest the combination proposed by the Examiner. Each of the applied references teaches away from the proposed combination.

The Board is respectfully requested to reverse the Final Rejection of Claims 4-6 and remand the application to the Examiner for further processing and a Notice of Allowance.

A Petition for Extension of Time to file the Appeal Brief is filed concurrently herewith,
along a check in payment of the extension fee of \$60.00 and the Appeal Brief fee for a small
entity of \$250.00.

Respectfully submitted,

A handwritten signature in black ink, appearing to read 'W. H. Drummond', is written over the printed name.

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CLAIMS APPENDIX

Claim 4: A method of using an aqueous effluent comprising the steps of:

collecting water contaminated by the salts of Na, Ca, Mg, Cl, SO₄, or CO₃;

processing the contaminated water to produce a first effluent of clean water and a second effluent of waste water,

the clean water having increased sodium so as to have more sodium than the contaminated water and having a salt content too high for potable use,

and

a second effluent of waste water having 1.5% or more by weight of the salts of Na, Ca, Mg, Cl, SO₄, or CO₃ or combinations thereof and a greater salt content than the clean water;

analyzing the clean water to determine if its sodium content is too high for potable use,

and

using the clean water within a cooling tower to dissipate heat if it has been determined that the clean water's sodium content is too high for potable use.

Claim 5: The method of using an aqueous effluent of Claim 4 wherein the step of processing the contaminated water includes the step of water softening.

Claim 6: The method of using an aqueous effluent of Claim 5 wherein the step of processing the contaminated water is by ion-exchange, precipitation, membrane softening or electrolysis.

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10/706,341	11/11/03	JEFFREY L. GELLNER		3643
Invention: METHODS OF UTILIZING WASTE WATERS PRODUCED BY WATER PURIFICATION PROCESSING				
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